

Worksheet 15 (Scheduling 1):
Priority Lists and Decreasing Time Algorithm

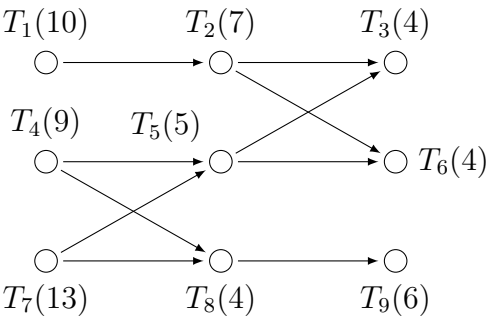
Group Names: _____

1. The following tasks need to be completed for a project.

| Task | Time Required | Prerequisites |
|------|---------------|---------------|
| A | 3 hours | |
| B | 2 hours | |
| C | 1 hour | |
| D | 2 hours | A, B |
| E | 2 hours | A, B |
| F | 8 hours | C |
| G | 1 hours | D, E, F |

- (a) To the left of the chart, draw a digraph to represent this project.
- (b) If there is only one processor, how long will it take to complete the project? _____
- (c) The critical time can be determined by looking at the longest sequence of tasks in the digraph, called the critical path.
- What is the critical path for this project? _____
- What is the critical time? _____

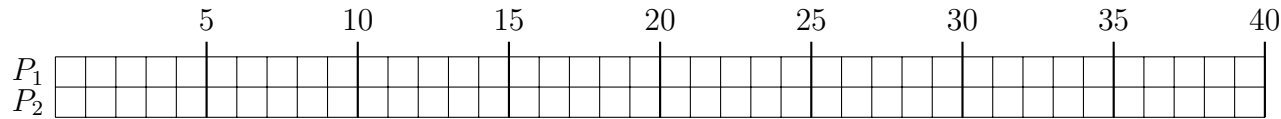
2. Consider the following digraph:



(a) Create a schedule using the priority list

$$T_1, T_2, T_3, T_4, T_5, T_6, T_7, T_8, T_9$$

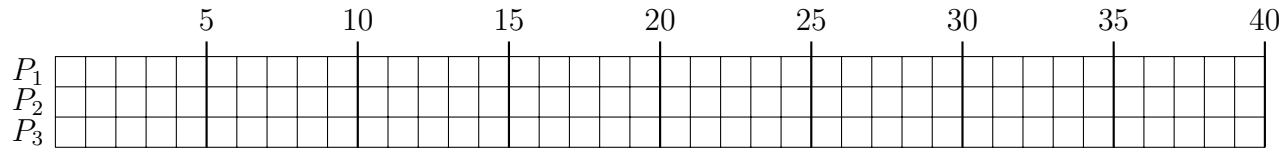
assuming you have only two processors.



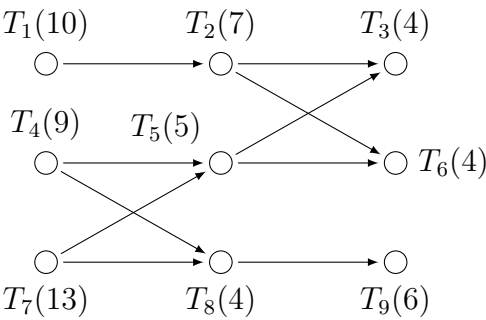
(b) Create a schedule using the same priority list

$T_1, T_2, T_3, T_4, T_5, T_6, T_7, T_8, T_9$

assuming you have three processors.



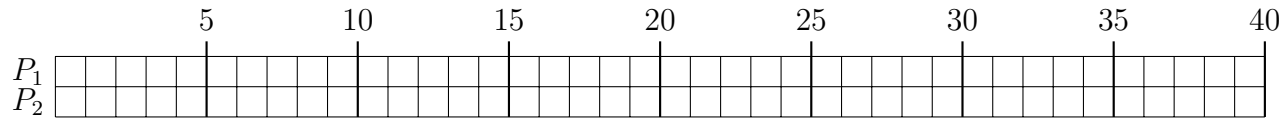
3. Consider the same digraph:



The Decreasing Time Algorithm says: Create the priority list by listing the tasks in order from longest completion time to shortest completion time.

(a) What priority list do you get if you prioritize the tasks using the Decreasing Time Algorithm?

(b) Create a schedule using the priority list you just found, assuming you have only two processors.



How does it compare to your previous schedule?

4. Go back to the original digraph you constructed in Problem 1.

(a) What prioritization do you get if you use the Decreasing Time Algorithm for this list of tasks?

(b) What schedule do you get with that prioritization, using two processors?

